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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,568	01/22/2002	Mou-Shiung Lin	MEGP0004USA	6093
27765 7590 02/27/2008 NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116				
EXAMINER MITCHELL, JAMES M				
ART UNIT		PAPER NUMBER		
2813				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/055,568

Applicant(s)

LIN ET AL.

Examiner

JAMES M. MITCHELL

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 219-223, 228, 232, 236, 238-242, 250-257, 259, 260 and 262-267 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 219-223, 228, 232, 236, 238-242, 250-257, 259, 260 and 262-267 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/15/2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to applicant's amendment filed June 8, 2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 219- 223, 228,232, 236, 238, 239, 250, 251, 257, 259, 260, 263-267 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180).

5. Tabrizi (Fig. 2, 5) discloses:

(cl. 219, 264) a chip package comprising: a substrate (510) comprising silicon, semiconductor material (CLM 12 of Tabrizi), said substrate having no circuitry (Fig. 5);

only one die (520) adhesively joined (e.g. 530) with said substrat, a first insulation layer (550/570) comprising a first portion over said die (e.g. portion immediately over) and a second portion over substrate but not over said only one die (e.g. portion to left or right of die); and a patterned line (e.g. 560) over said only one preformed die and over said preformed substrate;

(cl. 220) wherein said preformed die comprising a thin- film circuit layer formed therein (e.g. within die; Col. 2, Lines 51-54), said patterned line having a thickness greater than that of said thin-film circuit layer (e.g. can see 560);

(cl. 223) wherein said patterned line connects multiple portions of said only one preformed die (e.g. IC within die send signal though 560);

an insulating layer (550) between said only one preformed die and said patterned line;

(cl. 226) said insulating layer comprises benzocyclobutene (BCB) (Col. 2, Lines 21-23 &39-40);

(cl. 228, 232, 235) further comprising an insulating layer (570) over said patterned line;

(cl. 236, 238, 239) further comprising passive device comprising a capacitor/ inductor/ resistor over said substrate (Col. 5, Lines 1-4);

(cl. 250) wherein an opening (515) is in said preformed substrate and accommodates said only one preformed die (Fig. 5);

(cl. 251) said only one preformed die having a top surface and a lower surface said preformed substrate being under said lower surface of said only one preformed die, said top surface of said only one preformed die being at a horizontal level (e.g. top pf chip

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and top of substrate co-planar) wherein said passive device is over said horizontal level ("passive elements...on a redistribution layer"¹; Col. 5, Lines 1-4);

(cl. 257) with the insulation (e.g. 570) over (e.g. above) said substrate and around said only die (e.g. to left and right of die);

(cl. 259) wherein insulation above pattern is an epoxy (Par. 0104)

(cl. 260) further comprising a solder bump (580; CLM 13 of Tabrizi) on said patterned;

(cl. 263) die is an integrated circuit and therefore has multiple active devices;

(cl. 265) with the pattern comprises copper (CLM 3 of Tabrizi);

(cl. 266) wherein an opening (e.g. space taken by wire) is in said first layer and connection through opening;

(cl. 267) and a portion of line not under die (e.g. farthest left and right portion of wire not directly over die).

6. Tabrizi does not appear to disclose that its insulation may be a polyimide.

7. However Tabrizi discloses the same invention as claimed except that its insulation is disclosed as BCB instead of polyimide, Ahn (Par. 0036) shows that both BCB and polyimide produce equivalent structures known in the art. Therefore, because these two insulators are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to select polyimide for BCB insulator.

8. Moreover, applicant has not disclosed that his selection of material (e.g. gold, copper, BCB, Polyimide; see footnote 6) produces unexpected results or otherwise

¹ Items 550 & 560 above horizontal forms part of redistribution layer.

critical. As such, the selection of the claimed material for example BCB or polyimide as an insulator or gold and copper for wirings would have been obvious to one of ordinary skill in the art, since it has been held that selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945); See M.P.E.P 23144.07. See also KSR v Teleflex, 550 U.S. ___, 17 (2007) (finding that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense).

9. With respect to the intended use limitations of claim 221 and 222 that for example the lines are power or ground bus, the prior art forms the same structure as the claimed invention. As such, the claim would not be distinguishable over the prior art, since it has been held that the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

10. Claim 240 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180) as applied to claim 219 and further in combination with Tahara et al. (U.S. 2002/0017730).

11. Neither Tabrizi or Ahn appear to disclose incorporating a filter as a passive device.
12. Tahara utilizes a filter as a passive device (Par. 0069).
13. It would have been obvious to one of ordinary skill in the art to incorporate a wave guide into the structure of Tabrizi in order to provide a passive component as required by Tabrizi (Col. 5, Lines 1-4).
14. Claim 241 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180) as applied to claim 236 and 243 and further in combination with Shuy et al. (U.S. 2003/0118738)
15. Neither Tabrizi or Ahn appear to disclose a wave-guide as a passive device.
16. Shuy utilizes a wave-guide as a passive device (e.g. CLM 8 of Shuy).
17. It would have been obvious to one of ordinary skill in the art to incorporate a wave guide into the structure of Tabrizi in order to provide a passive component as required by Tabrizi (Col. 5, Lines 1-4).
18. Claims 242 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180) as applied to claim 236 and 243 and further in combination with Jun et al. (U.S. 2002/0084510)
19. Neither Tabrizi or Ahn appear to disclose a MEMS as a passive device.
20. Jun utilizes a MEMS as a passive device (Abstract).

21. It would have been obvious to one of ordinary skill in the art to incorporate a MEMS into the structure of Tabrizi in order to provide a passive component as required by Tabrizi (Col. 5, Lines 1-4).

22. Claims 252-256 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180) as applied to claim 219 and further in combination with Korman (U.S. 5,959,357)

23. Neither Tabrizi or Ahn appear to disclose its substrate comprising second layer, said first layer being on said second layer, wherein said first layer is the silicon and said second layer is a metal copper.

24. Korman (Fig. 3) utilizes a substrate comprising a first layer on a copper, second metal layer (22).

25. It would have been obvious to one of ordinary skill in the art to modify the silicon substrate of Tabrizi such that a portion is formed on a second layer that is a metal copper in order to provide a heat spreader as taught by Korman (Col. 4, Lines 55-56).

26. Claim 262 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabrizi (U.S. 6,867,499) and Ahn (U.S. 2003/0020180) as applied to claim 219 and further in combination with in combination with Alcoe et al. (U.S. 2002/0135063).

27. Tabrizi discloses a terminal/bump (21), but does not appear to disclose its being gold.

28. However, Alcoe (Par. 0010) discloses gold terminals/bumps.

29. It would have been obvious to one of ordinary skill in the art to form the terminal of gold as taught by Tabrizi in order to provide electrically conductive terminal as required by Murayama (14,16). Furthermore, with the selection of material see paragraph 9 of this office action.

30. Claims 219, 236, 238, 239,257,259, 266 264, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sai et al. (U.S. 5,874,770) in combination with Tabrizi (U.S. 6,867,499).

31. Sai (e.g. Fig. 11) discloses:

(cl. 219, 257, 259, 264) a chip package comprising: a substrate (45), substrate having no circuitry (Fig. 5); only one die (44) joined with said substrate by an adhesive(19), a first insulating layer (e.g. 42/10/42) comprising a first portion over said only one die (e.g. portion immediately above die) and a second portion not over said only one die (e.g. portion. left or right of die), said insulation is a polyimide/polymer (e.g. Abstract; Col. 7, Lines 19-22); and a patterned line (e.g. 38) over said only one preformed die and over said preformed substrate;

(cl. 266) circuit layer connected to die through opening in first insulation (e.g. filled via 47);

(cl. 236) capacitor (37) over insulation;

(cl. 238) inductor (33) over insulation;

(cl. 239) resistor (16) over insulation.

32. Sai does not show that the die is connected to a silicon/semiconductor substrate by adhesive.

33. However, Tabrizi utilizes a die adhered to a silicon/semiconductor substrate by adhesive.

34. It would have been obvious to one of ordinary skill in the art to attach the die of Sai with the substrate of Tabrizi in order to provide an alternate means to package the chip of Sai as taught by Tabrizi (Title).

35. Furthermore, because mounting die on semiconductor substrate are a one of a finite solutions to provide support and packaging structures for dies as evidenced by Tabrizi, it would have been obvious to one of ordinary skill in the art to try ion implantation to form nitrogen in the layer of Narwankar. E.g. KSR v Teleflex, 550 U.S. __, 17 (2007) (finding that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense). See also Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination).

Response to Arguments

36. Applicant's arguments with regard Tabrizi filed June 8, 2007 have been fully considered but they are not persuasive. Applicant alleges patentability, because the

use of Ahn to establish the obviousness of use of polyimide would be improper, because Ahn was not analogous. Examiner respectfully disagrees. It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both references are in the field of semiconductor art and therefore it is proper to look for materials customary in the semiconductor technology. Furthermore, applicant has merely tried to distinguish his invention by using known materials based on their suitability for their intended purpose of being dielectric; this is prima facie obvious as indicated in the office action. Applicant's mere arguments are not enough to overcome examiner's prima facie case. See MPEP 2145 (*In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness."))

Conclusion

37. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Carl Whitehead Jr./
Supervisory Patent Examiner, Art
Unit 2813

Ex. Mitchell
February 19, 2008
/James M. Mitchell/
Examiner, Art Unit 2813